

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-4 and 11-14 are currently presented, Claims 1, 2, 4, 11, 12, and 14 having been amended, and Claims 5-10 and 15-20 having been canceled without prejudice or disclaimer. The changes and additions to the claims do not add new matter and are supported by the originally filed specification, for example, on page 10 line 19 to page 11, line 23; page 1, lines 20-23; and Fig. 9.

In the outstanding Office Action, Claims 1-3 and 11-13 were rejected under 35 U.S.C. §102(b) as anticipated by Aoyama et al. (WO 01/91332, which corresponds to U.S. Patent No. 6,968,212, hereafter “Aoyama”); and Claims 4 and 14 were rejected under 35 U.S.C. §103(a) as unpatentable over Aoyama in view of Marchetto et al. (U.S. Patent No. 5,914,959, hereafter “Marchetto”).

With respect to the rejection of Claim 1 under 35 U.S.C. §102(b), Applicants respectfully submit that the amendment to Claim 1 overcomes this ground of rejection. Amended Claim 1 recites, *inter alia*,

a modulation unit configured to modulate data in a hierarchical manner using multiple types of modulation techniques and to produce hierarchically modulated data that includes signal states for the multiple types of modulation techniques.

Applicants respectfully submit that Aoyama fails to disclose or suggest these features of amended Claim 1.

Aoyama shows a base station apparatus 100 including a modulation section 153 and a modulation system determining section 152 (see Fig. 2 of Aoyama). The modulation system determining section 152 selects between different modulation techniques, such as 16QAM, 64QAM, or QPSK, to use during a transmission (see col. 3, lines 43-54 of Aoyama). The

modulation system determining section 152 then instructs modulation section 153 about the selected modulation system to use. In other words, Aoyama describes a modulation section that transmits using a single selected modulation system at a time. Therefore, the modulated data in Aoyama includes signal states for only the selected modulation system.

However, Aoyama fails to teach or suggest a modulation unit that modulates data in a hierarchical manner using multiple types of modulation techniques and produces hierarchically modulated data that *includes signal states for the multiple types of modulation techniques*, as defined by amended Claim 1.

Thus, it is respectfully submitted that amended Claim 1 (and all associated dependent claims) patentably distinguishes over Aoyama.

Marchetto has been considered but fails to remedy the deficiencies of Aoyama with regard to amended Claim 1. Therefore, it is respectfully submitted that amended Claim 1 (and all associated dependent claims) patentably distinguishes over Aoyama and Marchetto, either alone or in proper combination.

Amended independent Claim 11 recites features similar to those of Claim 1. Therefore, it is respectfully submitted that amended Claim 11 (and all associated dependent claims) patentably distinguishes over Aoyama and Marchetto, either alone or in proper combination.

With respect to the rejection of dependent Claim 4 under 35 U.S.C. §103(a), Applicants respectfully submit that the amendment to base Claim 2 overcomes this ground of rejection for at least the following reasons. Amended Claim 2 recites, *inter alia*,

a sampling pattern generating unit configured to generate a sampling pattern for each of the multiple types of modulation techniques, *the sampling pattern is a constellation pattern in a phase plane* defining a sampling space for quantizing said data in accordance with each of said modulation techniques. (Emphasis Added).

Additionally, Claim 4 recites, *inter alia*,

the modulation device according to claim 2,
wherein the transmission unit is configured to transmit the
sampling pattern, together with the hierarchically
modulated data.

Applicants respectfully submit that Aoyama and Marchetto fail to disclose or suggest these features of dependent Claim 4.

The Office Action admits that Aoyama fails to disclose or suggest that the sampling pattern is transmitted along with the modulated data as defined by Claim 4 (see page 5 of Office Action). The Office Action relies on Marchetto to remedy the deficiencies of Aoyama.

Marchetto is directed towards a digital communication system having an automatically selectable transmission rate. Fig. 1A of Marchetto shows a data stream sent from a transmitter to a receiver. The data stream is divided into sequence frames 12, and each frame includes a pilot symbol block 10 (see col. 3, lines 54-58 of Marchetto). Fig. 2 of Marchetto shows that at the receiver, there is a pilot symbol block processor 31 that compares a received pilot symbol block with a known pilot symbol block (from stored template 34). Based on the comparison, a number of errors for a pilot symbol block can be determined so that a proper data rate can be determined (see col. 4, line 55 to col. 5, line 11).

The Office Action takes the position that the pilot symbol block corresponds to the claimed sampling pattern that is transmitted with the modulated data in Claim 4. As discussed above, the pilot symbol block of Marchetto is a block of data that is sent at the beginning of a data frame to determine the number of errors that are occurring so that a proper data rate can be set. However, the pilot symbol block of Marchetto is not ***a sampling pattern that is a constellation pattern in a phase plane***, as defined in Claim 4 (from Claim 2).

Therefore, Marchetto fails to remedy the deficiencies of Aoyama with regard to Claim 4. Thus, Applicants respectfully submit that dependent Claim 4 patentably distinguishes over Aoyama and Marchetto, either alone or in proper combination.

Dependent Claim 14 recites features similar to those of Claim 4. Thus, Applicants respectfully submit that dependent Claim 14 patentably distinguishes over Aoyama and Marchetto, either alone or in proper combination.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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